

## **Title: Using a simulated environment to support students learning clinical skills**

### **Abstract**

Within intellectual disability nursing students are prepared within a biopsychosocioeducational model and curriculum address these challenges. Using a simulated learning environment has great potential for promoting competence and in-depth knowledge of substantive topics relevant to practice. This article presents an assignment designed to more closely resemble realworld activities to allow students develop and exercise skills that translate to practice activities and incorporates a student's reflective comments on the process. The assignment was designed to foster intellectual disability student nurses ability to facilitate family/client education. The aim of the assignment was fulfilled through the students designing a clinical skill teaching session that could be used with families/clients. The sessions were recorded and the student reviewed their recording to reflect on their performance and to self assess. To facilitate student learning the modules academic lecturer also reviewed the recording and both lecturer and student meet to discuss the reflection and self assessment.

### **Introduction**

Ireland has seen much change in nurse education resulting in a four year degree programmes since 2002 comprising of both theoretical (72 weeks) and clinical (74 weeks) components (Deasy et al., 2011). Within intellectual disability nursing students are prepared within a biopsychosocioeducational model (Doody and Doody, 2012) and nurse education curriculum strives to address these challenges. However nurse education takes place against a backdrop of a complex and every changing healthcare environment, thus curriculums need to be responsive and foster new ways of supporting student education. Depending on the chosen pedagogical approach many educational instructors can enrich the classroom environment, student learning, meta-cognition and critical thinking (Jensen et al., 2009). With this in mind and to prepare intellectual disability nursing students for a complex, dynamic healthcare environment, the faculty member designed an assignment incorporating the use of a simulated learning environment, video recording and analysis, reflection and self-assessment.

The assessment was specific to a module on the multiple and complex health needs of individuals with intellectual disability and involved the students designing and delivering a teaching session appropriate to use with a family of a person with intellectual disability regarding a specific clinical skill. The student cohort (n=30) were divided into two clinical skill lab groups with 15 per group. The skills associated with the module were listed and a lottery system was employed to allocate each student a clinical skill that they would deliver as a teaching session at the end of the module. The challenge was to engage students in; the clinical skill and develop their skills of working with families and clients with a disability. This is in line with the Irish professional nursing bodies regulations for registration (An Bord Altranais, 2005) requiring education programmes to enable students to develop skills of analysis, critical thinking, problem solving and reflection. The necessitate for these skills are emphasised within an intellectual disability

nurses daily work as they are required to think critically, provide effective care that supports both client and family in a manner that empowers them to take control over their own health. The module was completed at the end of the students' second academic year. This article presents the use of simulated environments, video analysis, reflection and self-assessment with a module as an educational method within an undergraduate module and incorporating a student's (co-author) reflective comments on the module and its process.

### **Applying the use of simulation within the current context**

Traditionally practical skills have been taught using face-to-face methods such as lectures, live demonstrations, group work and tutorials (Grimshaw et al., 2001). During the session the instructor demonstrates the skill and feedback is given as students practice the skill. This traditional approach creates a number of limitations such as the time-constraints associated with adhering to room booking schedules, students access to feedback and the equity of the feedback provided (Archer, 2010). In addition it denies the student the opportunity to be an observer where they view their performance as which can occur if students view a video playback of their performance. This is a valuable learning opportunity as it enables the student to focus on potential deficits in their verbal and non-verbal communication (Noordman et al., 2011). With technological advances and increased accessibility to such technologies, it has facilitated innovative teaching methods which have the potential to overcome the limitations of traditional approaches (Jennings and Cashman, 2008). As traditionally all too often skills were left to be picked up on an ad hoc basis by students while in clinical practice. This trusting to chance, reinforces what simulation can offer us in that we can have a certainty that students have attempted and/or are assessed at doing.

University education should incorporate multimedia with which students are familiar to assist their learning of practical skills (Oblinger, 2006; Coffee and Hillier, 2008). Incorporating the use of multimedia and utilising students increased awareness of multimedia technologies creates an opportunity to overcome the limitations of instructor observation and feedback on student performance and facilitates the student to reflection on their own performance (Noordman et al., 2011). The ability to reflect on ones own performance is an effective strategy for life-long learning and an essential characteristic of professional behaviour (Shepard and Jensen, 2002; Maloney et al., 2012). However, the link between reflection and the enhancement of clinical skill performance remains speculative and abstract (Donaghy and Morss, 2007). While on the other hand one reason for a poor link with performance is related to the inaccurate perception of the learner regarding their performance (Maloney et al., 2012). Whereas the use of a video recording of the task provides students with repeated opportunities to view their performance, fosters ones skills in selfevaluation and supports tutor feedback (Boyer et al., 2009).

Due to the complex healthcare arena and the wide range of roles and responsibilities facing newly qualified nurses, nurse educators are required to prepare graduates to deliver safe effective healthcare ready for practice (Billett, 2009; Smith et al., 2009). To ensure this educators continually search for innovative teaching strategies to optimise clinical learning in an evolving healthcare system (Elfrink et al., 2010). Educational

approaches to teaching and learning must be responsive to these changes (Brooks et al., 2010) and a business as usual approach is not an adequate response (Benner et al., 2009; Glasgow et al., 2010). One of these responses has led to the increasing use in simulation based education (Akhtar- Danesh et al., 2009). Simulation has behavioural and constructivist origins (Parker and Myrick, 2009). Where behaviourists focus on skill acquisition and constructivists focus on the development of higher order thinking, non-technical skills and clinical judgment (Walder and Olson, 2007). In the last 10 years simulation-based healthcare education has undergone unexpected expansion (Issenberg, 2006). The integration of simulation is seen as a paradigm change and an area flourishing as a hot topic in nurse education with research opportunities (Seropian et al., 2004; Nehring, 2008; Jeffries et al., 2009; Harder, 2010).

Simulation techniques are recognised as a valid method of education (Cant and Cooper, 2010) with positive effects on knowledge acquisition and/or skills training (Ravert, 2002). Simulation in the majority of the studies increased students' clinical skills. However, some studies indicate no difference between traditional teaching modalities and simulation, although no studies identify a decrease in the simulation group (Harder, 2010). On the other hand Lapkin et al. (2010) identifies that the use of simulation significantly improves learning outcomes fundamental to clinical reasoning (i.e., knowledge acquisition, critical thinking, ability to identify deteriorating patients). While McCaughey and Traynor (2010) highlight that simulation experiences prepared students for the transition from student to qualified nurse as their confidence was enhanced. While acknowledging the evidence supporting the use of simulation to facilitate the transfer of knowledge to performance is in its infancy, it is the actual, rather than perceived, impact of simulation on placement performance that is yet to be established (Baillie and Curzio, 2009). Consequently the degree to which skills acquired during simulation transfer to practice is often supported only by anecdotal evidences (Alinier et al., 2006). With few studies demonstrating the transfer of simulation-based learning into the clinical environment and its effect on clinical practice (Flanagan et al., 2007; Murray et al., 2008).

Simulation as an educational strategy, allows students develop, refine and apply their knowledge and skills in a safe environment (Jeffries, 2005). Simulation improves cognitive and psychomotor skills (Alinier et al., 2006) communication and teamwork (Beaubien and Baker, 2004; Shapiro et al., 2004), self-efficacy and confidence (Nunn, 2004) and critical thinking (Distler, 2007). In addition the use of simulation and role play are seen as effective strategies that support students to become competent in clinical or technical skills (Harder, 2010; Shepherd, 2010). Through constructive, highly participatory and realistic tuition that is performed in realistic working environments and thereby students can apply these skills in their practice (Wilford and Doyle, 2006). It is acknowledged that the non-technical skills of cognitive and social skills are essential elements that complement ones technical skills (Flin et al., 2008). These elements have been identified as decision making, teamwork, situation awareness, communication, managing stress, leadership, and coping with fatigue and are the behavioural aspects required to ensure the delivery of safe effective care (Flin et al., 2008). Assessment involving simulation help overcome these challenges, enhancing students competence

and through learning environments that are interactive and mirror the real clinical situation (Arundell and Cioffi, 2005). The introduction of simulation does not however replace the need for clinical practice and learning in the real life situation, but does complement student learning in order to prepare them for their role and ensure quality of patient care (Maran and Glavin, 2003). Self-reflection of their own performance is an effective method of learning clinical skills. Students reflecting on their skills by reviewing the videotapes improves students' learning motivation and competency as reflecting on, and being critical of, ones own performances help students internalize information related to the procedure (Levett-Jones et al., 2007; Woolley and Jarvis, 2007).

Constructive feedback assists students to understand the positive and negative elements of their behaviours and performance, thereby facilitating students to modify their future actions (McKenne et al., 2011). The use of video feedback, where students are recorded and then watch the playback with an instructor, enhances feedback and allows the student view their own behaviours from a different perspective and improves the feedback process (Fanning and Gaba, 2007; Brimble, 2008). Where feedback is provided in combination with watching video-recordings it improves clinical skills (Brimble, 2008), increases patient dialogue, expression of empathy (Roter et al., 2004) and improved technique (Hauer et al., 2007). Feedback from an instructor while watching a video-recording with a student is more effective than watching video playback alone (Srinivasan et al., 2007). While self-reflection is a valuable tool, a student watching a video alone may be inadequate to improve self-assessment (Srinivasan et al., 2007). However through receiving feedback from an instructor as well as watching the video playback themselves, the reflective process is enhanced as it gains a focus and the student can reflect on the experience, discuss and learn from the experience with the instructor and consequently modify behaviours (Fanning and Gaba, 2007). Another advantage of the feedback process is that it provides the instructor with an opportunity to explore the students thoughts and feelings during the event and process.

### **The assignment and its process**

This assignment was developed in light of Deasy et al. (2011) study on role transition which highlighted only 53% of students surveyed felt competent in providing relevant health information to clients/patients and families. In addition only 51% of students surveyed felt competent in educating clients/patients and families regarding health issues. In light of these findings the academic lecturer aimed to develop and support these aspects within their module. Given that the authors' university had developed a simulated learning environment for student nurse education, resulting in 4 clinical skill laboratories, 1 midwifery laboratory, 1 home living suite, 4 interview rooms, 1 relaxation/sensory room and 1 student practice learning laboratory. These simulated areas have additional recording facilities at each station/bed area and there is a full range of simulated and non simulated equipment available. The laboratory areas are supported by a clinical skills coordinator, laboratory coordinator and an audio visual (AV) technician and the clinical skills were delivered by the academic lecturer.

On the first day of the intellectual disability nursing module the assignment criteria was give to each student. Intellectual disability does not constitute a homogeneous group, however in terms of diagnosis and classification there are a number of features which have gained widespread acceptance across professional boundaries internationally. Irrespective of the precise terminology, or wording in the various definitions, there are three core criteria; significant impairment of intellectual functioning, significant impairment of adaptive/social functioning and age of onset before adulthood (The British Psychological Society, 2000). The assignment required the student to plan and deliver a teaching session for both family and client incorporating a health promotion and empowerment philosophy based on the clinical skill assigned to them. Both family and client were incorporated as both family and client lives are intimately intertwined and can't be seen in isolation (Doody, 2012).

Clinical skills were allocated by a lottery system to the students and details of the task, students and semester are seen in Table 1. In addition the student would record the session and use the video to analyse their performance by reflecting on the process and assess their performance and learning. This self-assessment involved two stages. Stage one involved the student evaluating their performance based on benchmark performance (clinical skills book) and assignment criteria. Stage two required the student to engage in a personal reflection and this stage of the reflection was to be reported after their skills session and repeated when they sat to review their recording and complete their self-assessment. All students submitted their video recordings, post session reflection, video reflection and self-assessment to the lecturer for review and grading.

**Table 1 Clinical skills, module and student details.**

Clinical skills	Student and module details
<ul style="list-style-type: none"> <li>• Oxygen therapy</li> <li>• Suction therapy</li> <li>• Breast examination</li> <li>• Functions and promotion of sleep</li> <li>• Administration of insulin</li> <li>• Postural drainage.</li> <li>• Testicular examination</li> <li>• Sensory stimulation</li> <li>• Monitoring of blood glucose</li> <li>• Preparation to undergo investigative and diagnostic procedures.</li> <li>• Cervical screening.</li> <li>• Wound management and dressing techniques</li> </ul>	<p>Year of study - 2nd year  Semester - 4th semester  Male - 2  Female – 28  Mature entry students - 4</p> <p>Structure of semester - weeks 1-4 University, weeks 5-8 clinical practice, weeks 9-12 University.</p>

Table 2 identifies the criteria within stage one and two of the assignment. To support the students the academic lectured demonstrated the skills during the first four weeks of the module and the AV technician provided a talk and demonstrated the use of the recording

equipment. A support sheet was provided regarding the use of the AV recording equipment and web access details was provided to students so as they could access their recording form any internet enabled device. The students had the opportunity to practice their allocated skill in the student practice lab, record their session and the opportunity to arrange an agreed time with the lecturer who would give advice and feedback on their performance. In addition students could record their sessions and inform the lecturer so they could review the recording and agree an agreed time to discuss the performance. Within the semester there was a clinical placement from week five to eight after the first four weeks theoretical input and this afforded the students the opportunity to consolidate their learning and practice/discuss the skill with clinical staff. In weeks nine to twelve students re-entered the University for the remainder of their theoretical input and assessment of their clinical skills for the module. Students were required to identify the range of equipment needed and assign roles to their peers within the session and submit this to the lecturer one week prior to the session. This facilitated the laboratory coordinator to have all listed equipment in the room prior to commencement of the session and for the lecturer to discuss the role-play with peers.

**Table 2 Assessment criteria**

<p>Introduces self to client/family appropriately e includes name, position and purpose.</p> <p>Identified the clinical skill to the client/family and indicated their role.</p> <p>Applied correct procedural steps.</p> <p>Communicated with client/family throughout the procedure.</p> <p>Sought patient feedback where appropriate.</p> <p>Afforded the client/family the opportunity to practice the skill.</p> <p>Provided advice and guidance while client/family practised the skill.</p>	<p>Carefully considered risk to self and client/family and takes steps to minimise risk.</p> <p>Provides appropriate instructions for cognitive/communication level.</p> <p>Overall approach to task.</p> <p>Consider thoughts and feelings during the session.</p> <p>What went well.</p> <p>What did not go so well,</p> <p>What would you work on for future encounters with client/family.</p> <p>What you would do differently.</p>
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### **Lecturer reflective comments**

As reflection is a major component of practice it is also essential as academics we also reflect on our practice, teaching, learning and assessment strategies. In doing this I (lecturer) needed to consider;

What factors contributed to successful learning?

What factors impeded successful learning?

Did the composition of the group members impact the quality of the experience?

What were the issues regarding students who assumed the roles of client/family member in making the simulation more authentic?

What were the greatest challenges for me as a lecturer in the simulation experience?

What would you do differently if did it again?

For me the support provided to student through the opportunity to practice the skill, gain feedback and review recording prior to assessment were invaluable to successful learning. The support of the AV technician and resource information made the use of technology less daunting for students and provided a backup for them supporting their IT development. Issues regarding student lack of electronic engagement and usage did inhibit some students at the start of the process but they quickly engaged as there was an onsite support available to them. Furthermore as students worked in groups this created both positive and negative aspects. Firstly it was not always easy to identify times that groups could meet but this seems to be related more too prioritising issues. Students with family commitments tended to like mornings to meet as groups whereas other students tended to like the evenings as this was the time they were freest. Students found it quite difficult to assume a client or family role initially and through meeting and discussing it with me as lecturer they became more assured in their role. Their difficulty related more to their concerns about demonstrating knowledge and understanding of what was going on rather than be able to effectively role-play their part. Once students were clear of the expectation of the client/family role and the fact that it was only the knowledge and skills of the student within the skills demonstration that was been assessed they embraced the role-play with great effect. As lecturer facilitating this module it took a large volume of my time in preparing the students, supporting them, reviewing their work in individual sessions and developing the skill scenario for the session with the student. If I were to do this session again I would develop scenarios for each skill and have identified roles for students within the scenario. Also to reduce time given to this module I would afford each student one individual session rather than the open door system I operated on this occasion. While this would place less demand on my time it would need to be balanced against the support for the students and for that reason I would encourage peer assessment during the practice stage as the students can share the recording with other if they wish or give in time feedback during the practice session.

### **Student reflective comments**

Given that the students were actively engaged in clinical and theoretical knowledge and assessments the lecturer identified to the group they were willing to support students write for publication based on their experience of the module. However only one student expressed an interest and while only one student comments are provided they are representative of all students who undertook the module. Here a student's reflective comments are presented to identify the learning and reflection that occurred during this module and in the text "I" is used to represent the student. In reflecting my first thoughts when we were given the assignment were of initial 'shock' due to the fact that this seemed unrealistic in the sense that I would achieve the required standard. I also felt it was an 'unrealistic expectation' of us as second year students as the module consisted of a health plan for the theoretical component and the teaching session for the clinical skills component. In addition while the simulated practice and recording of skills was not new I did feel this was 'going the next step'. However these feelings were alleviated somewhat by the introduction and explanation by the lecturer and AV technician regarding the expectations and use of equipment. In addition the lecturer did provide assistance by demonstrating the skills and by meeting individual students in the student practice lab and by reviewing pre-assessment videos. This support did create a sense of 'support and

enablement' as the focus became on our 'skill development and ability' to function as a professional rather than the usual focus of 'assessment and passing'.

I did practice my clinical skill and arrange to meet the lecturer for one of the practice sessions in addition to us both reviewing the video of another skill practice session one week prior to the specified day of performance. However the clinical skill I had to perform did require other participants, firstly one person was required to play the part of the client and one of the parent of the client. This created an inbuilt 'frustration and anxiety' as to even practice the skill required 'teamwork and coordination' with others. This resulted in us forming 'sub-groups' where we would contribute to each others clinical skill and rotate the roles. This process 'facilitated me to gain a greater understanding of the process from all perspectives'. As initially I found it quite difficult to support the parent to conduct the skill as I tended to 'jump in and do rather than facilitate them and provide feedback that would assist them to perform the skill'. When I was playing the part of the parent in another skill I also found it frustrating when 'they would not let me do what they showed me' and even though it was my first time I felt I could do it. In addition from the client perspective having people 'work on you' or assume you 'knew what was coming next' was quite scary and daunting. All these aspects made me consider how I communicate and my own body language during an activity and indicated to me that I 'needed to look over a recording prior to doing the final assessment'. This was an 'awaking' for me as I would have only intended to practice the skill and do the assessment on the day and video record the session. Through video recording the session and watching the playback I become quite 'embarrassed' as it was difficult to see 'what you actually do versus what you think you do' and this embracement resulted in me doing a number of practice sessions in the student lab and recording them until I reached a stage that I was 'comfortable with allowing another see the recording'. When I had reached this stage I notified the lecturer I posted the recording to the module code and the lecturer could access the recording prior to us meeting to discuss the recording and the lecturer giving feedback and direction on areas to consider when performing on the final assessment day.

This module did take more time than anticipated as there was many practice sessions with and without recordings and the 'process did enable me to work in a new way where I had to consider all perspectives and work within a team. The process enabled me to gain more confidence in working with clients and families'. This confidence was developed 'through working in this safe environment' and been given the opportunity to view and analysis how I interact with people. Thereby I feel I will be 'more confidence in communicating with others and consider my knowledge and professionalism'. I also came to the realisation in this module that 'the skills we were gaining were purposeful and relevant to our future role'. However while I did find the self-assessment positive I did find it 'difficult to grade my own performance' and found that I would have 'lowered the actual result' from the one I felt I performed at and deserved. Overall the experience was very engaging, enlightening, fun and interesting, with the skills developed transferable to my future practice.



## **Discussion/conclusion**

Students place a higher value on learning by participating than on lectures or receiving information passively (Doody and Condon, 2012). Students within this module benefited from actively engaging in doing things and thinking about the things they are doing. Involving students in collaborative learning help students cope with a world where information is expanding at a phenomenal rate and where knowledge sharing is essential (Bassendowski, 2007). This assignment assisted students develop their clinical skills as they are important and fundamental component of the curriculum in preparing students to meet the responsibilities of a nurse. Developing self-awareness and self-evaluation are strategies recognised as improving learning outcomes, future professional development and lifelong learning (Dearnley and Meddings, 2007) and were incorporated within this assignment. Self-assessment using audio visual recording technology promotes critical thinking, self-awareness, reflection and confidence (Paul, 2010). Reflection and self-assessment have been shown to be critical elements of building clinical skill acquisition (Zick et al., 2007) and video-based self-assessment can motivate self-improvement by helping students identify their strengths and weaknesses, as well as gain insights into the effects of their behaviours (Docherty et al., 2005). Within the student reflective comments in this article it can be seen that the module assignment assisted the student develop their self-awareness, self-assessment and self-evaluation ability and created a greater understanding of their role and the role of those they care for and provide care to.

Simulation can be described as the re-enactment of real life events utilising computer software, role-play, case studies or games that capture reality and engage students in the application of their acquired knowledge (Billings and Halstead, 2005) or promoting understanding through doing (Prescott and Garside, 2009). An ongoing challenge in undergraduate nurse education is to support students to think critically and transfer knowledge into care experiences that they are exposed to. Simulation has been utilized within this module as a method to address this challenge, where students actively participated in their learning experience through exploring their ability to apply technical and non-technical skills. Simulated learning is suited to developing positive attitudes where students can learn and practise communication skills (Wakefield et al., 2006; Sleeper and Thompson, 2008) and develop problem solving skills (Bland and Sutton, 2006) but it has the potential to diminishing confidence if not facilitated successfully (Lundberg, 2008). Simulation has been used in the acquisition of clinical skills within nurse education (Moule et al., 2008; Sinclair and Ferguson, 2009), teaching patient safety behaviours (Gannt and Webb-Corbett, 2010) and quality and safety education (Jarzemsky et al., 2010). Based on the student reflective comments, the time, effort and energy involved in the simulated exercise was time well spent and rewarding. Assisting the student achieve the objective of raising awareness of technical and non technical skills and developing their skills in client/family education.

Overall the assignment was effective in assisting student learning, allowing the student the opportunity to identify their non technical skills through self analysis of video recordings, be assessed and subsequently identify further learning needs. Utilising student self-videos of performance and reflecting on the activity assisted the student evaluate their performance against the standard benchmark. Having a positive impact on the

student's clinical and behavioural skill acquisition which may not be afforded to them through traditional teaching methods. Students did find it difficult to self-assess in relation to grading and were over critical of their performance but this may be in an effort to exercise caution as the lecturer would be co-assessing the work also. This article demonstrates simulation has earned a place in nurse education as a viable option to supplement clinical practice and while it will not replace actual student contact with real clients/families, it does offer students the opportunity to practice and gain knowledge prior to clinical exposure and future career. Debriefing through video feedback supported learning and was reinforced by reflective thinking. However the time required by academic to write multiple simulation scenarios, plan and prepare scenarios should not be underestimated.

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